

**AMENDMENT B**  
(37 C.F.R. 1.111)

**IN THE CLAIMS:**

Please amend claims 1, 7, 21 and 27 in accordance with 37 C.F.R. 1.121.

The claims are attached herein on separate sheets.

## **AMENDMENT TO CLAIMS**

**[Deleted material is struck-through and added material is underlined]**

1. (Currently Amended) An electrolyzer for the separation of water comprising:  
an aqueous electrolytic solution comprising water, the aqueous electrolyte solution  
partially filling ~~an~~ **a non-vented** electrolysis chamber such that a gas reservoir region is formed  
above the aqueous electrolyte solution, **said chamber being adapted to be installed in a closed  
pressurized piping system;**

two principal electrodes comprising an anode electrode and a cathode electrode, the two  
principal electrodes being at least partially immersed in the aqueous electrolyte solution;

one or more supplemental electrodes at least partially immersed in the aqueous electrolyte  
solution and interposed between the two principal electrodes wherein the two principal electrodes  
and the one or more supplemental electrodes are held in a fixed spatial relationship **and are not  
connected electrically to a power source;**

**each adjacent electrodes being spaced-apart from each other by a distance of about  
0.15 inches to about 0.35 inches;**

**heat sink means in the form one or more external fins for removing heat from the  
electrolyzer;** and

said electrolyzer **being adapted to separate the water such that its constituents of H  
and O are not recombined and instead produced jointly to make** ~~producing~~ a combustible  
gas composed of **combinations** ~~clusters~~ of hydrogen and oxygen atoms structured according to  
a general formula  $H_mO_n$  wherein m and n have null or positive integer values with the exception  
that m and n can not be 0 at the same time,

wherein said combustible gas has a varying energy content depending on its use.

2. (Original) The electrolyzer according to claim 1, wherein said combustible  
gas contains atomic hydrogen.

3. (Original) The electrolyzer according to claim 1, wherein said combustible  
gas contains atomic oxygen.

4. (Original) The electrolyzer according to claim 1, wherein the combustible gas  
instantly melts solids.

5. (Original) The electrolyzer according to claim 1, wherein the combustible gas can be used as a fuel without the need of atmospheric oxygen.

6. (Original) The electrolyzer according to claim 1, wherein the combustible gas can bond to combustible fuels via magnetic induction.

7. (Currently Amended) The electrolyzer according to claim 1, wherein said combinations ~~clusters~~ of hydrogen and oxygen atoms structured according to the general formula  $H_mO_n$  are clusters ~~magnecules~~.

8. (Original) The electrolyzer according to claim 1, wherein when said combustible gas is used as an additive to a combustible fuel, a combustion of said fuel having said additive results in an exhaust emission having less pollutants than a combustion of said fuel alone.

9. (Withdrawn) A bond between a fossil fuel and a combustible gas, said combustible gas being composed of clusters of hydrogen and oxygen atoms with a toroidal polarization of their orbitals and consequential magnetic field along the symmetry axis of said toroidal polarizations, said bond originating from the induced magnetic polarization of at least some of the atomic orbitals of said fuel and the consequential attraction between opposing magnetic polarities  
wherein said combustible gas has a varying energy content depending on its use and said bonded fossil fuel and combustible gas has a varying energy content depending on its use.

10. (Withdrawn) The bond according to claim 9, wherein an energy efficiency of a combustion of the resulting fuel is greater than a sum of the separate efficiencies of the combustion of said fossil fuel and said cluster of hydrogen and oxygen gas.

11. (Withdrawn) The bond according to claim 9, wherein a combustion of said resulting fuel has an exhaust emission having less pollutants than a combustion of said fossil fuel alone.

12. (Withdrawn) A combustible gas composed of clusters of hydrogen and oxygen atoms structured according to a general formula  $H_mO_n$  wherein m and n have null or positive integer values with the exception that m and n can not be 0 at the same time.

13. (Withdrawn) The combustible gas according to claim 12, wherein said combustible gas includes atomic hydrogen.

14. (Withdrawn) The combustible gas according to claim 12, wherein said combustible gas includes atomic oxygen.

15. (Withdrawn) The combustible gas according to claim 12, wherein the combustible gas instantly melts solids.

16. (Withdrawn) The combustible gas according to claim 12, wherein the combustible gas is capable of combustion without the need of atmospheric oxygen.

17. (Withdrawn) The combustible gas according to claim 12, wherein the combustible gas is capable of bonding to combustible fuels via magnetic induction.

18. (Withdrawn) The combustible gas according to claim 12, wherein said clusters of hydrogen and oxygen atoms structured according to the general formula  $H_mO_n$  are magneccules.

19. (Withdrawn) The combustible gas according to claim 12, wherein when said combustible gas is used as an additive with a combustible fuel, a combustion of said fuel having

said additive results in an exhaust emission having less pollutants than a combustion of said fuel alone.

20. (Withdrawn) The combustible gas according to claim 12, wherein said combustible gas has a varying energy content depending on its use.

21. (Currently Amended) An on-demand self-producing combustible gas electrolyzer system for the separation of water into a combustible gas for use in combustion equipment, such as welder and combustion engines, the electrolyzer system comprising:

an electrolyte reservoir having a top portion adapted to contain a generated combustible gas and a bottom portion containing electrolytic fluid comprising water;

~~an~~ **a non-vented electrolyzer, said electrolyzer being installed in a closed pressurized portion of the system;**

an electrical conductor contained within the electrolyzer;

a pump fluidly interposed between the bottom of the electrolyte reservoir and the electrolyzer wherein the pump draws electrolytic fluid from the electrolyte reservoir and pumps it to the electrolyzer;

a radiator fluidly connected to and interposed between the electrolyzer and the electrolyte reservoir, the radiator adapted to cool the generated combustible gas before returning to the top portion of the electrolyte reservoir;

an interstitial space within the reservoir above the electrolytic fluid in the top portion of the electrolytic reservoir wherein the generated combustible gas accumulates; and

at least one dryer/filter means through which the generated combustible gas passes before being drawn as needed for use,

wherein the **electrolyzer is adapted to separate water such that its constituents of H and O are not recombined and instead produced jointly to make a** combustible gas ~~produced by said electrolyzer is~~ composed of **combinations** ~~clusters~~ of hydrogen and oxygen atoms structured according to a general formula  $H_mO_n$  wherein m and n have

null or positive integer values with the exception that m and n can not be 0 at the same time, and

wherein said combustible gas has a varying energy content depending on its use.

22. (Original) The electrolyzer system according to claim 21, wherein said combustible gas contains atomic hydrogen.

23. (Original) The electrolyzer system according to claim 21, wherein said combustible gas contains atomic oxygen.

24. (Original) The electrolyzer system according to claim 21, wherein the combustible gas instantly melts solids.

25. (Original) The electrolyzer system according to claim 21, wherein the combustible gas can be used as a fuel without the need of atmospheric oxygen.

26. (Original) The electrolyzer system according to claim 21, wherein the combustible gas can bond to combustible fuels via magnetic induction.

27. (Currently Amended) The electrolyzer system according to claim 21, wherein said ~~combinations~~ ~~clusters~~ of hydrogen and oxygen atoms structured according to the general formula  $H_mO_n$  are ~~clusters~~ ~~magnecules~~.

28. The electrolyzer system according to claim 21, wherein when said combustible gas is used as an additive to a combustible fuel, a combustion of said fuel having said additive results in an exhaust emission having less pollutants than a combustion of said fuel alone.

29. (Withdrawn) A method for increasing the fuel efficiency of an internal combustion engine or the cutting or welding efficiency of a welding system, the method comprising:

providing an electrolyzer comprising:

an electrolysis chamber;

an aqueous electrolyte solution comprising water, the aqueous electrolyte solution partially filling the electrolysis chamber such that a gas reservoir region is formed above the aqueous electrolyte solution;

two principal electrodes comprising an anode electrode and a cathode electrode, the two principal electrodes at least partially immersed in the aqueous electrolyte solution; and

one or more supplemental electrode at least partially immersed in the aqueous electrolyte solution and interposed between two principle electrodes that are not connected to the anode or cathode with a metallic conductor wherein the two principal electrodes and the one or more supplemental electrodes are held in a fixed spatial relationship;

applying an electrical potential between the two principal electrodes wherein a combustible gas is produced, which is comprised of clusters of hydrogen and oxygen atoms structured according to a general formula  $H_mO_n$  wherein m and n have null or positive integer values with the exception that m and n can not be 0 at the same time, and wherein said combustible gas has a varying energy content depending on its use; and

providing means for delivery of the combustible gas to its end use.

30. (Withdrawn) The method of claim 29, wherein the one or more supplemental electrodes are not connected to either of the two principal electrodes with a metallic conductor

31. (Withdrawn) The method of claim 29, wherein a first group of the one or more supplemental electrodes are connected to the anode electrode with a first metallic conductor and a second group of the one or more supplemental electrodes are connected to the cathode electrode with a second metallic conductor.

32. (Withdrawn) The method of claim 29, wherein the fixed spatial relationship is such that the two principal electrodes and the one or more supplemental electrodes are essentially



parallel and wherein each electrode is separated from an adjacent electrode by a distance from about 0.15 inches to about 0.35 inches.

33. (Withdrawn) The method of claim 29, wherein the electrolyzer further comprises a rack to hold the two principal electrodes and the one or more supplemental electrodes in the fixed spatial relationship.

34. (Withdrawn) The method of claim 32, wherein the two principal electrodes and the one or more supplemental electrodes are removably attached to the rack.

35. (Withdrawn) The method of claim 34, wherein the electrolyzer further comprises a retainer for securing the two principal electrodes and the one or more supplemental electrodes to the rack, the retainer being removably attached to the an electrolysis chamber.

36. (Withdrawn) The method of claim 29, wherein the one or more supplemental electrodes are 1 to 50 supplemental electrodes.

37. (Withdrawn) The method of claim 29, wherein the one or more supplemental electrodes are each individually a metallic wire mesh, a metallic plate, or a metallic plate having one or more holes.

38. (Withdrawn) The method of claim 29, wherein the one or more supplemental electrodes are each individually a metallic plate having one or more holes.

39. (Withdrawn) The method of claim 29, wherein the one or more supplemental electrodes are each individually a metallic wire mesh.

40. (Withdrawn) The method of claim 29, wherein the two principal electrodes are each individually a metallic wire mesh, a metallic plate, or a metallic plate having one or more holes.

41. (Withdrawn) The method of claim 29, wherein the two principal electrodes are each individually a metallic plate.

42. (Withdrawn) The method of claim 29, further comprising adjusting the operation of an oxygen sensor so that the oxygen sensor does not cause a fuel rich condition.

43. (Withdrawn) The method of claim 42, wherein the operation of the oxygen sensor is adjusted by an RC circuit, the RC circuit includes:

a resistor placed in series with the oxygen sensor's check engine light electrical line; and

a capacitor placed between the oxygen sensor's control line that monitors the amount of oxygen and the check engine light electrical line, wherein the capacitor is attached to the check engine electrical line at the opposite side of the resistor from where the resistor is in electrical contact with the oxygen sensor.

44. (Withdrawn) The method according to claim 29, wherein said combustible gas contains atomic hydrogen.

45. (Withdrawn) The method according to claim 29, wherein said combustible gas contains atomic oxygen.

46. (Withdrawn) The method according to claim 29, wherein the combustible gas instantly melts solids.

47. (Withdrawn) The method according to claim 29, wherein the combustible gas can be used as a fuel without the need of atmospheric oxygen.

48. (Withdrawn) The method according to claim 29, wherein the combustible gas can bond to combustible fuels via magnetic induction.

49. (Withdrawn) The method according to claim 29, wherein said clusters of hydrogen and oxygen atoms structured according to the general formula  $H_mO_n$  are magneccules.

50. (Withdrawn) The method according to claim 29, wherein when said combustible gas is used as an additive to a combustible fuel, a combustion of said fuel having said additive results in an exhaust emission having less pollutants than a combustion of said fuel alone.